

What is claimed is:

1. A composition comprising an isolated Invaplex of gram-negative bacteria comprising at least one invasin protein associated with LPS of said gram-negative bacteria.
2. A composition according to claim 1 wherein, said gram-negative bacteria is selected from the genera consisting of *Shigella*, *Escherichia*, *Salmonella*, *Yersinia*, *Rickettsia*, *Brucella*, *Erhlichiae*, *Edwardsiella*, *Campylobacter*, *Legionella* and *Neisseria*.
3. A composition according to claim 2 wherein, said *Shigella* is selected from the group consisting of *S. flexneri*, *S. sonnei*, *S. boydii*, *S. dysenteriae*.
4. A composition according to claim 2 wherein, said *Escherichia* is *Escherichia coli*.
5. A composition according to claim 4 wherein, said *Escherichia coli* is EIEC.
6. A composition according to claim 3 wherein said Invaplex comprises at least one invasin protein chosen from the group consisting of IpaA, IpaB, IpaC, IpaD, and LPS.
7. A composition according to claim 7 wherein said Invaplex comprises IpaA, IpaB, IpaC, IpaD, and LPS.
8. A composition according to claim 7 wherein said Invaplex further comprises VirG or portions thereof.
9. A composition according to claim 5 wherein said Invaplex comprises at least one invasin protein chosen from the group consisting of IpaA, IpaB, IpaC, IpaD and LPS.
10. A composition according to claim 5 wherein said Invaplex comprises IpaA, IpaB, IpaC, and LPS.
11. A composition according to claim 10 wherein said Invaplex further comprises IpaD.
12. A composition according to claim 11 wherein said Invaplex further comprises VirG or portions thereof.

13. A method for preparing isolated Invaplex from *Shigella*, said method comprising the steps of:

- (i) water extracting *Shigella*;
- (ii) separating and discarding membrane fragments from said water extracted *Shigella* resulting in a solution containing the Invaplex; and
- (iii) isolating the Invaplex from said solution.

14. The method according to claim 13 wherein said isolating in step iii is by using an ion exchange matrix.

15. A method for preparing isolated Invaplex from *Escherichia*, said method comprising the steps of:

- (i) water extracting *Escherichia*;
- (ii) separating and discarding membrane fragments from said water extracted *Escherichia* resulting in a solution containing the Invaplex; and
- (iii) isolating the Invaplex from said solution.

16. The method according to claim 15 wherein said isolating in step iii is by using an ion-exchange matrix.

17. A method for screening agents or drugs which reduce or eliminate Invaplex virulence said method comprising detecting a dissociation of said Invaplex in the presence of said agent or drug.

18. A method for detecting gram-negative bacterial infection in a biological sample comprising

- (i) contacting a sample with a solid surface to which is attached an Invaplex from bacteria suspected of causing the bacterial infection; and

(ii) detecting the presence or absence of a complex formed between said Invaplex and antibodies specific therefor in said sample wherein the presence of a complex formed indicates the presence of said bacterial infection.

19. The method of claim 18 wherein said biological sample is from an animal.

20. A method for detecting gram-negative bacteria infection in a sample comprising

(i) contacting a sample with a solid surface to which is attached an Invaplex from bacteria suspected of being present in said sample;

(ii) detecting the presence or absence of a complex formed between said Invaplex and said bacteria in said sample wherein the presence of a complex formed indicates the presence of said bacteria.

21. The method of claim 20 wherein said sample is chosen from the group consisting of: an environmental sample, an insect, and an animal.

22. An antibody to an Invaplex which recognizes the Invaplex or any portion thereof.

23. A method to elicit an antigen-specific immune response in a subject, said method comprising administering to said subject an Invaplex from a gram-negative bacteria along with said antigen wherein said antigen-specific immune response is chosen from the group consisting of cell-mediated immune response, humoral immune response, and mucosal immune response.

24. The method of claim 23 wherein said antigen is selected from the group consisting of viral antigens, mammalian cell surface molecules, bacterial antigens, fungal antigens, protozoan antigens, parasitic antigens, and cancer antigens.

25. The method of claim 23 wherein said Invaplex is administered by a route selected from the group consisting of intramuscular, bronchial, genital, nasal, oral, parenteral, transcutaneous, transdermal and rectal.